Railroad Corridor & Barrow Pit/Wetland

Railroad Corridor & Barrow Pit/Wetland

[Existing conditions inventory maps and photographs follow this section]

Introduction

Two parallel railroad tracks bisect the ranch near its eastern boundary. Circa 1879, the Utah Northern Railroad (acquired by the Northern Pacific Railroad Company in 1888) established a line through Deer Lodge. Today, the Burlington Northern Santa Fe railroad uses this east track, with an average of two trains passing each day. The western track Chicago, Milwaukee, St. Paul & Pacific Railroad, built in 1908, ceased operation in 1983. A portion of the track remains, as does the graded railroad bed. This line is used to interpret the role of the railroad in ranching operations. Both these railroads served as important early transportation networks for transporting cattle to markets. They also allowed for the expansion of the ranch (and the western cattle industry in general) during that time period.

Approximately 64 acres of land on either side of the railroad corridor was dredged for the construction of the Milwaukee Railroad. These barrow pits are approximately 1000 yards long and reach almost two hundred yards in width at their widest point. As they are considered an integral part of the railroad corridor, they are included in this component landscape.

Natural Systems and Features

[see Map EC-38 at the end of this section]

The railroad beds are elevated above grade for most of their length, except at road crossings located near the home ranch and northern boundary where they area at grade (see Photo 3-8-1). Each bed is approximately 10 feet wide and separated by an average of 75 feet throughout most of the park, although this area expands to over 140 feet near Cottonwood Creek. This is a depressed area that functions as a drainage swale for the two beds.

There are four stream crossings along the railroad corridor. The lines cross Cottonwood Creek at the southeast corner of the ranch, Johnson Creek near the Visitor Center, the North Fork of Johnson Creek near the Warren Residence, and an unnamed gulch near the Warren Pumphouse (HS-86).

The Burlington Northern Railroad bed is elevated approximately 10 feet higher than the Milwaukee Railroad bed throughout most of the ranch (see Photo 3-8-2). These beds consist of sand and gravel fill material taken from the barrow pits; additional fill material was likely taken from other borrow areas off the ranch, although the source and composition of this material is not known.

The barrow pits are deep pits that are lower in elevation than their surrounding landscape, and the banks of the railroad beds rise steeply up along their sides (see Photo 3-8-3). This is more noticeable in the western pit, as it appears deeper. These pits are now considered wetlands and standing water is evident in these areas.

The beaver, in particular, has found conditions within these pits and many other areas within the riparian corridor ideal for colonization. Several beaver lodges have been constructed within these areas and are visible from Ranch roads (see Photo 3-8-4). This big-toothed, water-loving creature plays a significant role in the ecological history of the Clark Fork River valley, as well as the cultural history associated with the Ranch itself. Beaver are believed to have inhabited the

floodplains of the Deer Lodge Valley for thousands of years prior to European settlement. These animals were hunted by the American Indian tribes for their fur, and the significance of the beaver is evident in many of the names given to cultural features throughout the larger region (i.e., Beaverhead County and Beaverhead National Forest).

Before settling in the Clark Fork valley, John Grant earned his money as a fur-trader. Like his father before him, Grant trapped beaver for the Hudson Bay Company before becoming a rancher. The beaver, like the buffalo, was hunted to near extinction in the Northwest Territory during the mid-18th century. It has only been since the early 20th century that these creatures have begun to re-inhabit the region.

Beavers are an integral part of riparian and wetland ecosystems, and are considered a keystone species in an aquatic system. In addition to creating more biodiversity for wildlife and plants, other general benefits of a beaver ecosystem are erosion abatement and flood control, and the reduction of sedimentation in rivers and streams. However, while beavers are native species occupying an essential ecological niche, they are at times considered pests. In some areas of the ranch their presence is not welcomed, as their construction of structures, manipulation of riparian vegetation, burrowing in the waterways, etc., interfere with daily operations of the ranch, disrupt the historic patterns and features of the landscape, and limit the management of a number of other important natural and cultural resources. Some negative effects of these types of beaver activity include flooding of fences and gates, dammed irrigation ditches, restriction of cattle grazing and rotation by flooded pastures, alteration of vegetation patterns, overland flow of water across slickens that re-suspend toxic sediments, etc.

It is recommended that more research be conducted on the associated impacts, both positive and negative, of beaver colonization in preparation of Part II of this CLR, particularly as these impacts relate to the stabilization of the river corridor and mitigation of water quality.

Vegetation
[see Map EC-38 at the end of this section]

The vegetation found along the rail corridor generally consists of a mix of non-native and native grasses and forbs that are represented elsewhere in the ranch on dry upland benches. Common native grasses also include spring whitlow-grass (*Draba verna*) and uncommon/rare native forbs such as common sagewort (*Artemisia campestris*) and waxleaf penstemon (*Penstemon nitidus*). Non-native forbs, particularly baby's breath (*Gypsophila paniculata*) and spotted knapweed (*Centaurea biebersteinii*), are found along the railroad beds. These species are exotic. The park has invested considerable effort during recent years in trying to eradicate knapweed from this area.

A concentration of native grasses are found in a small area adjacent to the eastern barrow pit, which remains fenced off from the pasture land found in the Front Fields (see Photo 3-8-5). The 1984 vegetation study conducted by Peter Rice and Gary Ray found this area to contain bluebunch wheatgrass, giant wildrye, and needle-and-thread grass, as well as other grasses and forbs that represent the native Montana inter-mountain prairie community, such as Indian ricegrass (*Oryzopsis hymenoides*), moss phlox (*Phlox muscoides*), long-leaf phlox (*Phlox longifolia*), upland larkspur (*Delphinium nuttallianum*), woolypod milkvetch (*Astragalus purshii*)

and starvation cholla (*Opuntia polyacantha*).[1] The 2002 Rice/Hardin Vascular Plant Study generally found this area to contain generally the same species as were found in the 1984 study.[2]

The barrow pits contain plant species that are representative of wetland communities, and include cattails (*Typha latifolia*), softstem bulrush (*Scheonoplectus tabernaemontani*), forget-me-nots (*Myosotis scorpioides*), cottonwoods (*Populus trichocarpa*), willows (*Salix sp*.), and a variety of other less common and rare species (see Photo 3-8-6). These less common species include western serviceberry (*Amelanchier alnifolia*), yellow rocket (*Barbarea vulgaris*), ballhead waterleaf (*Hydrophyllum capitatum*), Utah honeysuckle (*Lonicera utahensis*), blunt-leaf yellowcress (*Rorippa curvipes*), redosier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*), and violet (*Viola sp*.).[3] All but the yellow rocket and forget-me-nots are native species. Cottonwoods and willows can also be found in-between the two railroad beds, where wet conditions provide habitat for these water-loving plants.

Spatial Organization
[see Map EC-38 at the end of this section]

There are primarily two types of spaces within this area. One within the corridor, which is defined by the tracks and raised beds of the railroad itself, and those within the barrow pits, which are defined by the topography and vegetation that characterizes them.

The railroad corridor takes on the character of the spaces that it passes along. Through the length of the ranch, the beds pass by the riparian woodlands of Johnson and Cottonwood Creeks, as well as the barrow pits themselves; here the corridor is defined by the tall cottonwoods and shrubby willows that predominate in these areas. In the area near the barrow pits, this same vegetation can be found in the area between the two railroad beds, and contributes to the enclosed "tunnel" effect found within each corridor (see Photo 3-8-7). Where the railroad passes through the home ranch, the corridor is less defined, as the beds are graded down to allow vehicular passage.

The barrow pits are large and narrow, yet enclosed spaces that are defined by the steep slope of the railroad corridor along one side, and the slopes rising up to the pastures on the other. The east barrow pit is the larger of the two, and its edges are framed by tall cottonwoods, while the center of the pit is dominated with water and lower growing sedges and rushes, which contribute to a sense of openness. The western barrow pit is more narrow and is dominated by tall cottonwoods.

Land Uses
[see Map EC-39 at the end of this section]

The eastern railroad track is currently owned by the Union Pacific and leased to the Burlington Northern Railroad. The western track Milwaukee Railroad bed was constructed in 1908, and abandoned in 1983 (see Photo 3-8-8). Most of its tracks have been removed, except for a 3168 foot segment near the Grant-Kohrs Residence. It is now owned by the National Park Service and used for interpretation.

The railroad corridor is also occupied by a major overhead utility line.

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[1] Ray, 4.
[2] Telephone interview with Janet Hardin, June 2, 2003.
[3] Species location information derived from Janet Hardin, "Plant Species & Locations, GRKO Database, Final Inventory" (Missoula: University of Montana, Division of Biological Sciences, June 3, 2003).

Constructed Water Features
[see Map EC-39 at the end of this section]

There are no active constructed water features within the railroad corridor or the barrow pit/wetland area. A siphon (HS-57) was constructed to channel irrigation water under the railroad beds. This historic feature is discussed in the buildings and structures section below.

Circulation
[see Map EC-39 at the end of this section]

As mentioned above, there are only two at-grade road crossings of the railroad corridor, one located near the northern edge of the ranch which provides access to the sewage lagoons (see Photo 3-8-1); the other is located near the home ranch (see Photo 3-8-9).

One dirt road runs parallel to the old Milwaukee Railroad bed, where it continues until the area where the tracks have been removed (near the L-Barn, HS-13). Here it shifts and continues over the abandoned rail bed corridor (see Photo 3-8-8).

Views and Vistas
[see Map EC-40 at the end of this section]

Views within the railroad corridor are characterized by the landscape features that are located along it. These include views of the Visitor Center area, the Grant-Kohrs Residence and Home Ranch Complex, the Warren Hereford Ranch Complex, and the pastures and hayfields located to the east and west of the corridor. Denser vegetation growth located within the barrow pits, as well as in the area between the two rail corridors, encloses the view within this area.

Views from within the barrow pits are fairly contained, as the topography surrounding these features rises steeply near the railroad corridor. Dense vegetation also encloses the views and focuses them inward.

Buildings and Structures
[see Map EC-39 at the end of this section]

Located east of the main ranch house and on either side of the railroad tracks, the **Siphon** (HS-57), (see Photo 3-8-10) was built circa 1908 by the Chicago, Milwaukee, & St. Paul Railroad as part of the construction of the railroad track. No longer in use, the siphon consists of two poured-in-place concrete wells joined by a subterranean concrete tunnel that channels water under the railroad grade. The siphon was used to irrigate the main ranch house front yard and to provide stock water to Stallion Barn HS-16.

A small **Pump House** (HS-86), (see Photo 3-8-11) is located in the northern pasture and on the north bank of the Kohrs-Manning Ditch. The pump house is a rectangular, one room structure with a gable roof. It is built on a concrete foundation with wood framing and the gable roof is covered with asphalt shingles. The roof is covered with corrugated metal sheets, which were added to the roof in 2000 by the NPS to protect the structure from further decay. A vertical plank door is located on the southern elevation as are two covered-over windows. A third covered window is found on the east elevation. A wetland surrounds the pump house and its outside piping systems are visible above the waterline. Built in 1960 by Con Warren, the structure is approximately 10 feet long by 8 feet high. It supplies water to the Front Field east of the railroad and north of the Warren Hereford Ranch complex.

Two **Cattle Cars** (GRKO-970 and GRKO-862), (see Photo 3-8-12) are located on the inactive Milwaukee railroad tracks and across from the Bielenberg Barn. The 1920s-era cattle cars are red-stained, wood-frame, box-type cattle cars attached to a metal railroad-car deck, axles, and wheels. Cattle car GRKO-970 was built circa 1923 while GRKO-862 was built circa 1929; both cars were donated to the NPS in the 1980s from other parts of the country. These cattle cars are typical of those used during the Conrad Warren era.

Two **railroad trestles** have been built to carry each of the railroad lines over the pedestrian underpass linking the visitor center with the rest of the ranch (see Photo 3-8-13). These trestles are supported by large wooden columns (approximately 10-12 inches in diameter) that support wooden beams and joists. Railroad track and ties are laid on top of wooden planking, and enclosed on the east and west sides by metal post and wire fencing. These overpasses are approximately 12 feet above the grade of the pedestrian trail.

Objects and Small-scale Features
[see Map EC-40 at the end of this section]

Fences and gates within the Railroad/Barrow pit component landscape are typical of those found elsewhere in the CLR study boundary. These fences and gates serve utilitarian purposes; prohibiting unauthorized access into the railroad corridor yet allowing NPS personnel into and out of the area.

The most predominant type of fence in this landscape is the **Metal Post and Wire fence.** This fence encloses almost all of the railroad corridor. Variations of this fence type surrounding the railroad corridor have both metal and wood posts supporting the barbed wire.

A short section of **Jack-Leg fence** is located along the railroad grade east of the Home Ranch Complex. This fence type is similar to other Jack-Leg fences found throughout the CLR study boundary. Two wood posts are crossed at the top to form an X-shape. One horizontal rail rest in the crux of the X while 3 more rails are attached to the exterior of one post to form an angled fence. A fifth rail is attached to the lower side of the opposite pole for added strength and security. All wood members of the fence are un-milled and unfinished.

In the northern portion of the railroad corridor is a short section of **4-rail stacked-end fence,** (see Photo 3-8-14). Four split-log rails extend between log posts on one side of the fence while two more split-log rails are placed on the lower half of the fence on the other side. At each post, the rails for one section are stacked alternately with the rails for the next section, creating a stacked appearance.
Three gate types are also located in the northern portion of the corridor: a **5-rail Braced Gate,** (see Photo 3-8-15) a **Galvanized Metal Gate,** (see Photo 3-8-16) and a **Metal Pipe Gate,** (see Photo 3-8-14). This gate has a hinge-post almost twice the height of the gate and has a long, diagonal brace leading from the top of the hinge-post to the opposite corner of the gate. This brace supposedly prevents and corrects sagging, although this gate is indeed sagging.

The metal pipe gate consists of brown-painted, welded metal pipe frame filled with 4 pipe rails and 2 vertical pipe posts. The upper corners of the frame are rounded.

The galvanized metal gate has 5 horizontal metal rails and a vertical metal post at the center. Two diagonal metal braces are located on each side of the central post.

Two overhead utility lines run parallel to the railroad corridor. The remaining electric power lines and poles along the east side of the Milwaukee rail corridor are remnants of the once electrified railroad. Most of these have been removed, except for a small section near the Home Ranch complex (see Photo 3-8-17). The other set of poles runs along the west side of the Milwaukee corridor. While the poles are still standing and appear to be in poor condition, the electrical wires appear discontinuous and are downed in some areas. It is assumed that this line is no longer in service.

A **wheel flange detector** is located just south of the railroad trestles, along side the Milwaukee railroad line. It consists of a gray metal utility box and concrete box with wooden lid. Two metal plates are also located on the inside edges of the adjacent tracks (see Photo 3-8-18). This system was installed to measure vibration caused by the trains, and is no longer operational.

Missing & Archeological Resources
[see Map EC-40 at the end of this section]

There is an area in this landscape that contains features possibly associated with excavation of gravel for the railroads. It consists of several concrete slabs, ramp type constructions, and scars of large drag lines.[4] A historic dump is also located within this component landscape. Specific information regarding the content and location of these features can be found in the *Cultural Resources Inventory* (2003).
Missing features include a maintenance shed which was used by the Milwaukee Railroad. Located to the west of the railroad cars, this feature was removed ca. 1982. Also missing is an oil barrel, which was located west of the railroad track, just south of the access road.

[4] NPS 95% Draft CLR review comments (March 12, 2004).

JMA, October 2002

Photo 3-8-1 : (C-22) The railroad beds are elevated above grade for most of their length, except at road crossings located near the home ranch and northern boundary where they are at grade.

JMA, October 2002

Photo 3-8-2 : (D-01) The Northern Pacific Railroad bed is elevated approximately 10 feet higher than the Milwaukee Railroad bed throughout most of the ranch.

JMA, October 2002

Photo 3-8-3 : (E-04) The barrow pits are deep pits that are lower in elevation than their surrounding landscape, and the banks of the railroad beds rise steeply up along their sides.

JMA, October 2002

Photo 3-8-4 : (E-01) Wetland conditions are found within the barrow pits. A beaver lodge can be seen at left.

JMA, October 2002

Photo 3-8-5 : (C-16) A concentration of native grasses are found in a small area adjacent to the eastern barrow pit, which remains fenced off from the pasture land found in the Front Fields.

JMA, October 2002

Photo 3-8-6 : (E-02) Cattails and other wetland plants, as well as cottonwoods and willows can be found within the barrow pits.

JMA, October 2002

Photo 3-8-7 : (D-22) Vegetation along the rail corridors create “tunnel” views in some areas.

JMA, October 2002

Photo 3-8-8 : (D-02) The Milwaukee Railroad bed was constructed in 1908, and abandoned in 1983.

JMA, October 2002

Photo 3-8-9 : (H-04) An at-grade crossing along the Sewage Treatment Service Road.

JMA, October 2002

Photo 3-8-10 : (AD-21) Siphon (HS-57).

JMA, October 2002

Photo 3-8-11 : (F-06) Pumphouse (HS-86).

JMA, October 2002

Photo 3-8-12 : (AD-19) Cattle Cars.

JMA, October 2002

Photo 3-8-13 : (RE-05) Railroad trestle above pedestrian underpass.

JMA, October 2002

Photo 3-8-14 : (E-09) 4-Rail Stacked End Fence with Metal Pipe Gate.

JMA, October 2002

Photo 3-8-15 : (E-08) 5-Rail Braced Gate.

JMA, October 2002

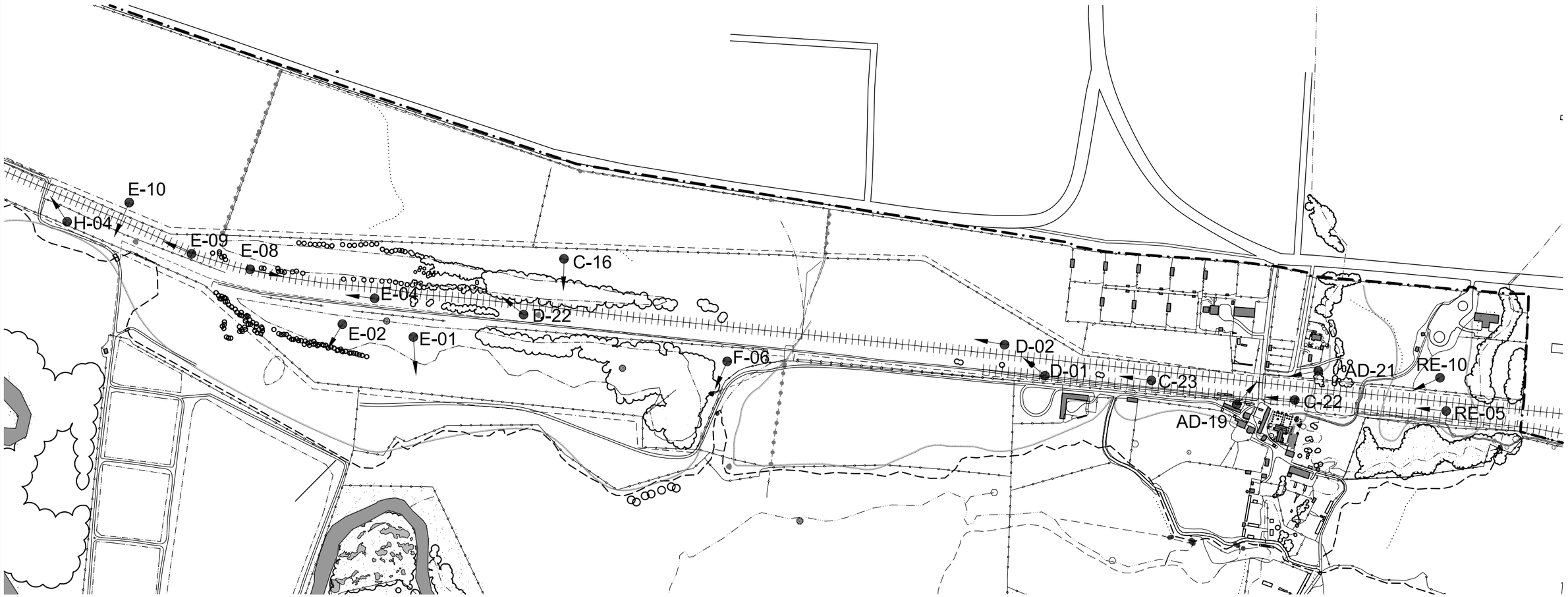
Photo 3-8-16 : (E-10) 4-Rail Locked End Gate with Galvanized Gate in background.

JMA, October 2002

Photo 3-8-17 : (C-23) Overhead utility lines.

JMA, October 2002

Photo 3-8-18 : (RE-10) Utility boxes with Wheel Flange Detector System.



Map Sources: Base mapping referenced to Grant-Kohrs Ranch National Historic Site 1994 aerial photographs and Montana 1:24,000 scale State Plane DRG quadrangles. GIS data was exported into Autocad format for production of base maps and further further detailed with additional data collected in the field.

The following data was provided by the National Park Service, Grant-Kohrs Ranch National Historic Site GIS Program (shapefile format), which was compiled 1998 and updated/field-checked by OCULUS/JMA during the October 2002 site visit: fences and gates; boundary lines; utility lines; fire hydrants; irrigation ditches, headgates, pipes, and risers; culverts; river boundaries; roads; railroad tracks; unvegetated slickens and tailings; fields; trails; cottonwood trees; beaver lodges and dams; hydrology; and groundwater monitoring wells. Metadata for this data is avaliable from World Wide Web: [http://www.nps.gov/gis/metadata/grko/]. Wetlands, hypsography (topography), and Montana 1:24,000 scale State Plane DRG quadrangles were derived from Montana State Library Natural Resource Information System, metadata available from: [http://nris.state.mt.us/gis/datalist.html].

Legend:

- Roads
- Vegetation
- Bench
- Fences
- Streams/Sloughs
- Railroad
- Buildings/ Structures
- Springs
- Old Ditches
- Main Ditches
- Lateral Ditches
- Component Landscape Boundary Line
- GRKO Boundary Line
- Beaver Lodges

Scale: 1" = 600'

A/E FIRM

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NAME: Susan Maxman Architects
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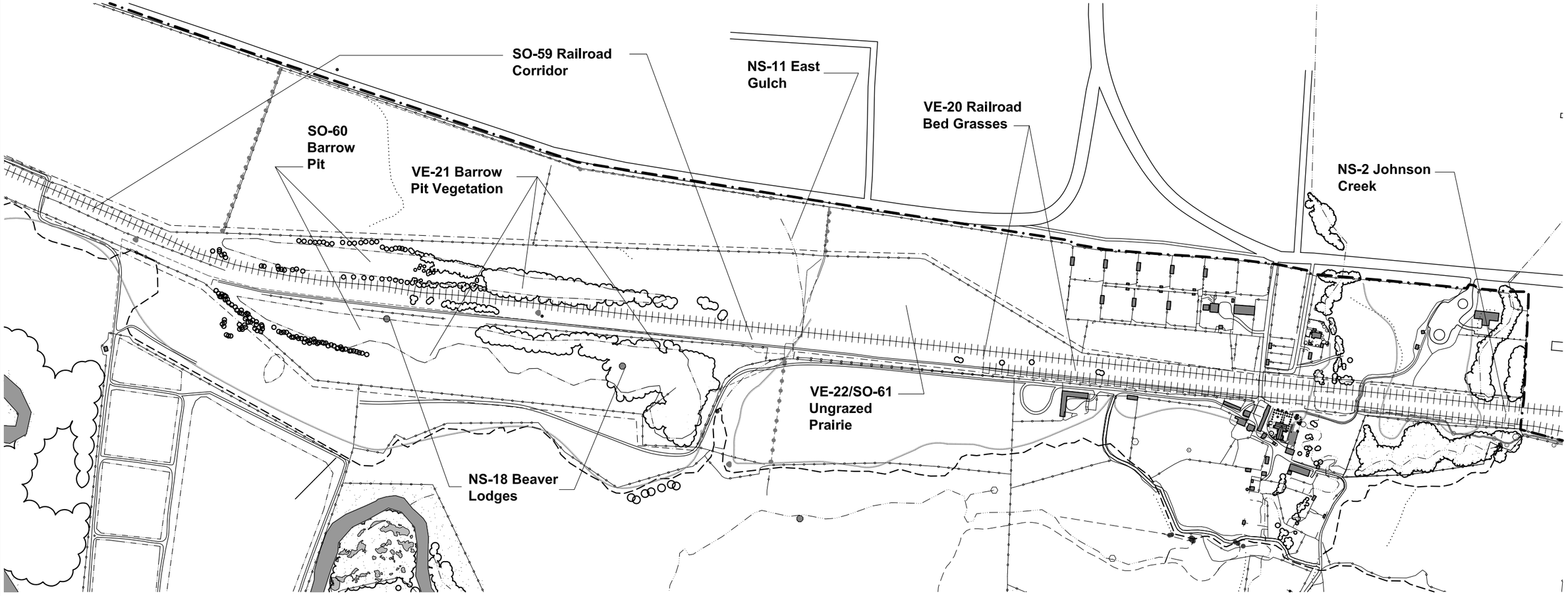
TECH. REVIEW: KLS, RMM
DATE: JULY 2004

SUB SHEET NO. P-10

EXISTING CONDITIONS INVENTORY
RAILROAD CORRIDOR & BARROW PIT/WETLANDS
PHOTO STATION POINT MAP
GRANT-KOHRS RANCH NATIONAL HISTORIC SITE

DRAWING NO.
PKG. NO.
SHEET
OF



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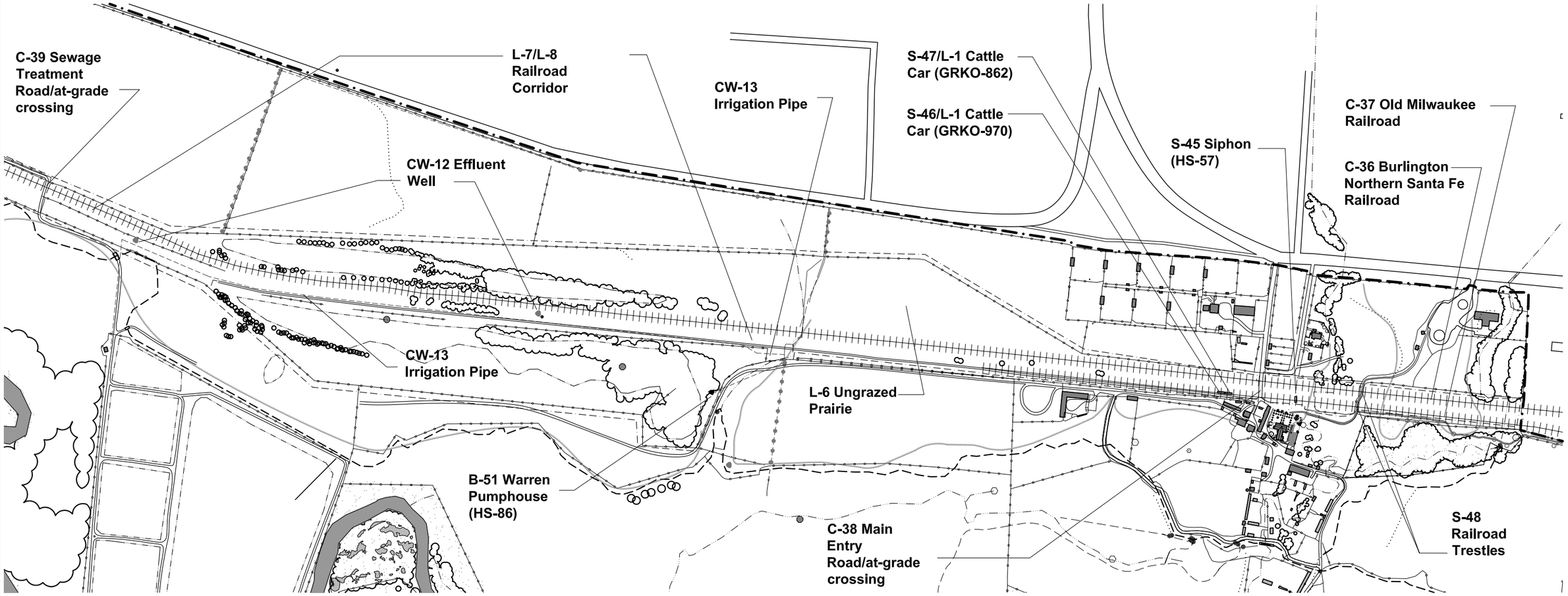
- Main Ditches
- Lateral Ditches
- Component Landscape Boundary Line
- GRKO Boundary Line
- Beaver Lodges

Scale: 1" = 800'

A/E FIRM PRIME NAME: Susan Maxman Architects CITY, STATE: Philadelphia, PA SUBCONTRACTOR NAME: John Millner Associates, Inc. CITY, STATE: Charlottesville, VA	DESIGNED: DRAWN: JLB, WMW TECH. REVIEW: KLS, RMM DATE: JULY 2004	SUB SHEET NO. EC-38	EXISTING CONDITIONS INVENTORY RAILROAD CORRIDOR & BARROW PIT/WETLANDS **NATURAL SYSTEMS, VEGETATION, AND SPATIAL ORGANIZATION** GRANT-KOHRS RANCH NATIONAL HISTORIC SITE	DRAWING NO. PKG. NO. SHEET OF



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- GRKO Boundary Line
- Beaver Lodges

Scale: 1" = 600'

A/E FIRM

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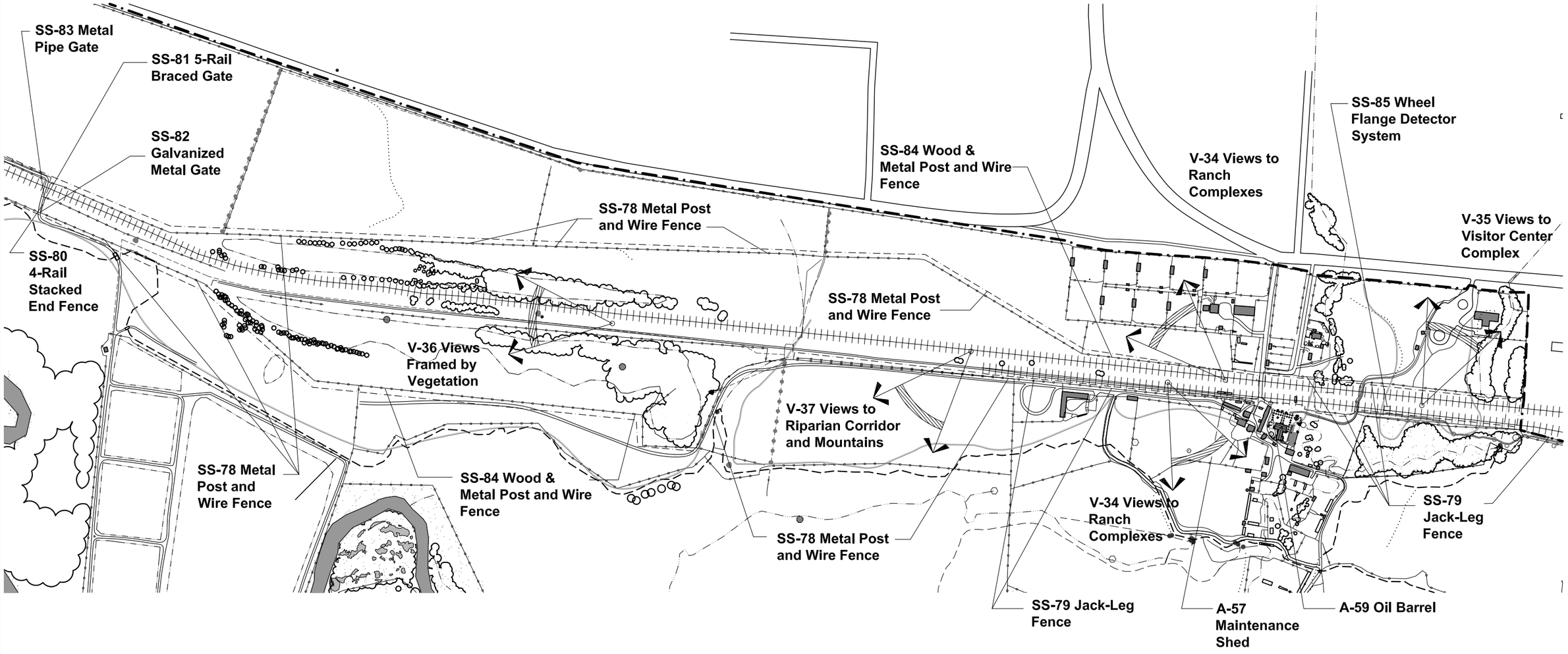
DRAWN: JLB, WMW
TECH. REVIEW: KLS, RMM
DATE: JULY 2004

SUB SHEET NO.
EC-39

EXISTING CONDITIONS INVENTORY
RAILROAD CORRIDOR & BARROW PIT/WETLANDS
CIRCULATION, BUILDINGS & STRUCTURES, LAND USE, AND CONSTRUCTED WATER FEATURES
GRANT-KOHRS RANCH NATIONAL HISTORIC SITE

DRAWING NO.
PKG. NO.
SHEET
OF



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